

CLAIMS:

1. A cancellation circuit for canceling spurious signals generated by a high voltage power supply specified for use with a digital television transmitter system, but used to supply power to a high power amplifier in an analog television transmission system that has more strict spurious requirements than the digital television transmitter system, comprising:
 - a signal source configured to generate a reference signal having a predetermined frequency, said predetermined frequency being a multiple of line frequency of an AC power source that provides power to said high voltage power supply;
 - 10 an amplitude adjustment mechanism configured to adjust an amplitude of said reference signal so as to match that of said spurious signal;
 - a phase adjustment mechanism configured to adjust a phase of said reference signal so as to be about 180 degrees out of phase with said spurious signal; and
 - 15 a modulator configured to modulate said reference signal with an analog television signal after said reference signal is amplitude and phase adjusted by said amplitude adjustment mechanism and phase adjustment mechanism respectively, an output of said modulator being a composite signal, wherein
 - 20 said composite signal is combined with said spurious signal prior to being transmitted so as to suppress said spurious signal to within said spurious requirements for said analog television transmission system.
2. The cancellation circuit Of Claim 1,
wherein said signal source includes a transformer.
- 25 3. The cancellation circuit of Claim 1,
wherein said composite output signal includes an audio signal, a video signal, and
said reference signal after being amplitude and phase adjusted.
4. The cancellation circuit of Claim 1, further comprising:
 - 30 a mixer configured to mix said composite signal with a L.O. signal and output said composite signal at an RF transmission frequency before being combined with said spurious signal.
5. The cancellation circuit of Claim 1,

wherein said amplitude adjustment mechanism and said phase adjustment mechanism are controlled based on a feedback signal, said feedback signal originating from an output of at least one of said high voltage power supply and said high power amplifier.

5 6. The cancellation circuit of Claim 1,

wherein said amplitude adjustment mechanism and said phase adjustment mechanism are implemented in a digital signal processor.

7. The cancellation circuit of Claim 1, further comprising:

a local oscillator and a multiplier configured to generate a L.O. signal;

a mixer configured to mix said composite signal output from said modulator and said L.O. signal, said mixer outputting said composite signal at an RF frequency, wherein said modulator is a balanced modulator; and

an amplifier configured to amplify said composite RF signal before said composite

15 RF signal is combined with said spurious signal.

8. The cancellation circuit of Claim 1, further comprising:

a local oscillator and a multiplier configured to generate an L.O. signal;

a mixer configured to mix said analog television signal and said L.O. signal, said

20 mixer outputting said analog television signal at an RF frequency;

said modulator configured to modulate said analog television RF signal and said amplitude and phase adjusted reference signal, said modulator outputting said composite signal at an RF frequency, wherein said modulator is a balanced modulator;

an amplifier configured to amplify said filtered composite RF signal before said

25 filtered composite RF signal is combined with said spurious signal.

9. The cancellation circuit of Claim 1, further comprising:

a local oscillator and a multiplier configured to generate an L.O. signal;

30 a mixer configured to mix said composite signal output from said modulator and said L.O. signal, said mixer outputting said composite signal at an RF frequency, wherein said modulator is a modulated amplifier; and

an amplifier configured to amplify said composite RF signal before said composite

RF signal is combined with said spurious signal.

10. A cancellation circuit for canceling a spurious signal generated by a high voltage power supply specified for use with a digital television transmitter system, but used to supply
5 power to a high power amplifier in an analog television transmission system that has more strict spurious requirements than the digital television transmitter system, comprising:

means for generating a reference signal having a predetermined frequency, said predetermined frequency being a multiple of line frequency of an AC power source that provides power to said high voltage power supply;

10 means for adjusting an amplitude of said reference signal so as to match that of said spurious signal;

means for adjusting a phase of said reference signal so as to be about 180 degrees out of phase with said spurious signal; and

15 means for modulating said reference signal with an analog television signal after said reference signal is amplitude adjusted by said means for adjusting an amplitude and phase adjusted by said means for adjusting a phase, an output of said means for modulating being a composite output signal, wherein

20 said composite output signal is combined with said spurious signal prior to being transmitted so as to suppress said spurious signal to within said spurious requirements for said analog television transmission system.

11. An amplifier system that includes a cancellation circuit for canceling a spurious signal generated by a high voltage power supply specified for use with a digital television transmitter system, but used to supply power to a high power amplifier in an analog television
25 transmission system that has more strict spurious requirements than the digital television transmitter system, said amplifier system comprising:

the cancellation circuit including

30 a signal source configured to generate a reference signal having a predetermined frequency, said predetermined frequency being a multiple of line frequency of an AC power source that provides power to said high voltage power supply,

an amplitude adjustment mechanism configured to adjust an amplitude of said reference signal so as to match that of said spurious signal,

a phase adjustment mechanism configured to adjust a phase of said reference signal so as to be about 180 degrees out of phase with said spurious signal, and
5 a modulator configured to modulate said reference signal with an analog television signal after said reference signal is amplitude and phase adjusted by said amplitude adjustment mechanism and phase adjustment mechanism respectively, an output of said modulator being a composite signal, wherein said composite signal is combined with said spurious signal prior to being transmitted so as to suppress said spurious signal to within said spurious requirements for said analog television transmission system;

10 a local oscillator and a multiplier configured to generate a L.O. signal; a mixer configured to mix said composite signal output from said modulator and said L.O. signal, said mixer outputting said composite signal at an RF frequency, wherein said modulator is a balanced modulator; and
15 an amplifier configured to amplify said composite RF signal before said composite RF signal is combined with said spurious signal.

12. An amplifier system that includes a cancellation circuit for canceling a spurious signal generated by a high voltage power supply specified for use with a digital television transmitter system, but used to supply power to a high power amplifier in an analog television transmission system that has more strict spurious requirements than the digital television transmitter system, said amplifier system comprising:
20 the cancellation circuit including
25 a signal source configured to generate a reference signal having a predetermined frequency, said predetermined frequency being a multiple of line frequency of an AC power source that provides power to said high voltage power supply,
30 an amplitude adjustment mechanism configured to adjust an amplitude of said reference signal so as to match that of said spurious signal,
a phase adjustment mechanism configured to adjust a phase of said reference signal so as to be about 180 degrees out of phase with said spurious signal, and
35 a modulator configured to modulate said reference signal with an analog television signal after said reference signal is amplitude and phase adjusted by said amplitude adjustment mechanism and phase adjustment mechanism respectively, an output of said modulator being a composite signal, wherein said composite signal is combined with said

spurious signal prior to being transmitted so as to suppress said spurious signal to within said spurious requirements for said analog television transmission system;

a local oscillator and a multiplier configured to generate an L.O. signal;

5 a mixer configured to mix said analog television signal and said L.O. signal, said mixer outputting said analog television signal at an RF frequency;

 said modulator configured to modulate said analog television RF signal and said amplitude and phase adjusted reference signal, said modulator outputting said composite signal at an RF frequency, wherein said modulator is a balanced modulator;

 an amplifier configured to amplify said filtered composite RF signal before said

10 filtered composite RF signal is combined with said spurious signal.

13. An amplifier system that includes a cancellation circuit for canceling a spurious signal generated by a high voltage power supply specified for use with a digital television transmitter system, but used to supply power to a high power amplifier in an analog television

15 transmission system that has more strict spurious requirements than the digital television transmitter system, said amplifier system comprising:

 the cancellation circuit including

 a signal source configured to generate a reference signal having a predetermined frequency, said predetermined frequency being a multiple of line frequency of an AC power source that provides power to said high voltage power supply,

20 an amplitude adjustment mechanism configured to adjust an amplitude of said reference signal so as to match that of said spurious signal,

 a phase adjustment mechanism configured to adjust a phase of said reference signal so as to be about 180 degrees out of phase with said spurious signal, and

25 a modulator configured to modulate said reference signal with an analog television signal after said reference signal is amplitude and phase adjusted by said amplitude adjustment mechanism and phase adjustment mechanism respectively, an output of said modulator being a composite signal, wherein said composite signal is combined with said spurious signal prior to being transmitted so as to suppress said spurious signal to within said spurious requirements for said analog television transmission system;

30 a local oscillator and a multiplier configured to generate an L.O. signal;

a mixer configured to mix said composite signal output from said modulator and said L.O. signal, said mixer outputting said composite signal at an RF frequency, wherein said modulator is a modulated amplifier; and

an amplifier configured to amplify said composite RF signal before said composite

5 RF signal is combined with said spurious signal.